

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having a convexly curved anterior surface and opposite ends;

a posterior wall having a flat posterior surface and opposite ends;

two lateral walls integrally connected between said anterior and posterior walls to define a monolithic, single-piece spacer body, each of said lateral walls having a flat lateral surface ~~and integrally connected between said opposite ends of~~ extending continuously from said anterior wall and to said posterior walls to define a chamber; and

said anterior, posterior and lateral walls cooperating to define a D-shaped spacer body sized and configured to substantially fill the space between the vertebrae with said convexly curved anterior surface of said anterior wall sized and shaped to substantially conform to an anterior aspect of the space between the vertebrae and wherein said walls of said spacer body are sized and shaped such that a single spacer body is sufficient to preserve a height of the space between the vertebrae; and

said walls further defining;

a superior vertebral engaging face defined by a thickness of said walls, said superior vertebral engaging face extending about a first opening defined by said chamber, said walls extending about and defining said first opening; and

an opposite inferior vertebral engaging face defined by said thickness of said walls, said opposite inferior vertebral engaging face extending about a second opening defined by said chamber, said walls extending about and defining said second opening.

2. (Original) The spacer of claim 1, further comprising an osteoinductive material contained within said chamber.

3. (Original) The spacer of claim 2 wherein said osteoinductive material is autograft.

4. (Original) The spacer of claim 2 wherein said osteoinductive material is a bioceramic.
5. (Original) The spacer of claim 4 wherein said bioceramic is a biphasic calcium phosphate ceramic.
6. (Original) The spacer of claim 2 wherein said osteoinductive material includes a bone morphogenic protein in a carrier.
7. (Original) The spacer of claim 6 wherein said bone morphogenic protein is selected from the group consisting of BMP-1, BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, BMP-6, BMP-7, BMP-8, BMP-9, BMP-10, BMP-11, BMP-12 and BMP-13.
8. (Original) The spacer of claim 7 wherein said bone morphogenic protein is BMP-2.
9. (Original) The spacer of claim 8 further comprising BMP-7.
10. (Original) The spacer of claim 6 wherein said carrier is selected from the group consisting of calcium sulfate, polylactic acids, polyanhydrides, collagen, calcium phosphate ceramics and polymeric acrylic esters.
11. (Original) The spacer of claim 10 wherein said carrier is an open-porosity polylactic acid polymer.
12. (Original) The spacer of claim 10 wherein said carrier includes collagen.
13. (Original) The spacer of claim 12 wherein said carrier is fibrillar collagen.
14. (Original) The spacer of claim 12 wherein said carrier is a collagen sponge.

15. (Original) The spacer of claim 10 wherein said carrier is provided in strips folded to conform to said chamber.

16. (Original) The spacer of claim 10 wherein said carrier is provided in sheets folded to conform to said chamber.

17. (Original) The spacer of claim 10, further comprising an osteoconductive material contained within said chamber.

18. (Original) The spacer of claim 17 wherein said osteoconductive material is allograft.

19. (Original) The spacer of claim 10 wherein said anterior wall defines a thru-hole configured for receiving an implanting tool.

20. (Original) The spacer of claim 10 wherein said superior face and said inferior face each define a roughened surface adapted to provide a friction fit with bone.

21. (Withdrawn) The spacer of claim 10, wherein each said lateral wall has an external surface and further comprising a lateral wing projecting from said external surface of each said lateral wall, each said wing disposed between said inferior and superior faces.

22. (Withdrawn) The spacer of claim 10, further comprising a first pair of blades extending from said superior face and a pair of second blades extending from said inferior face, said blades each having a cutting edge configured to pierce a vertebral end-plate.

23. (Withdrawn) A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having opposite ends and defining an anterior superior surface and an anterior inferior surface,

said anterior superior surface having a concave shape defining a first radius, said first radius configured to correspond to the anterior shape of an inferior vertebral end-plate, and

said anterior inferior surface having a convex shape defining a second radius, said second radius configured to correspond to the anterior shape of a superior vertebral end-plate;

a posterior wall having opposite ends and defining a posterior superior surface and a posterior inferior surface;

two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber, each said lateral wall defining a lateral superior surface and a lateral inferior surface;

a superior vertebral engaging face including said anterior superior surface, said posterior superior surface and said lateral superior surfaces, said superior face defining a first opening in communication with said chamber; and

an opposite inferior vertebral engaging face including said anterior inferior surface, said posterior inferior surface and said lateral inferior surfaces, said inferior face defining a second opening in communication with said chamber.

24. (Withdrawn) The spacer of claim 23 wherein said walls and said faces are composed of a biocompatible composite including a rigid foam carbonaceous material and a thin film of metallic material deposited onto said carbonaceous material.

25. (Withdrawn) The spacer of claim 23 wherein said first radius is between about 0.500" and about 1.250" and said second radius is between about 0.500" and about 1.250".

26. (Withdrawn) The spacer of claim 25 wherein both said first and second radii are about 0.750.

27. (Withdrawn) The spacer of claim 23 wherein:

said posterior superior surface has a concave shape defining a third radius, said third

radius configured to correspond to the posterior shape of an inferior vertebral end-plate; and
said posterior inferior surface has a convex shape defining a fourth radius, said fourth radius configured to correspond to the posterior shape of a superior vertebral end-plate.

28. (Withdrawn) The spacer of claim 27 wherein said third radius is between about 0.500" and about 1.250" and said fourth radius is between about 0.500" and about 1.250".

29. (Withdrawn) The spacer of claim 28 wherein both said first and second radii are about 0.750.

30. (Withdrawn) The spacer of claim 23 wherein said anterior wall defines a thru-hole for receiving an implanting tool.

31. (Withdrawn) The spacer of claim 23 wherein said anterior wall has a convexly curved anterior surface.

32. (Withdrawn) The spacer of claim 31 wherein said posterior wall has a flat posterior surface.

33. (Withdrawn) The spacer of claim 23, wherein:
said lateral superior surface defines a superior radius configured to correspond to the inferior shape of a vertebral end-plate; and
said lateral inferior surface defines an inferior radius configured to correspond to the superior shape of a vertebral end-plate.

34. (Withdrawn) The spacer of claim 23, wherein each said lateral wall includes an external surface and further comprising a lateral wing projecting from said external surface of each said lateral wall.

35. (Withdrawn) The spacer of claim 23, further comprising a first pair of blades

extending from said superior face and a second pair of blades extending from said inferior face, said blades each having a cutting edge configured to pierce a vertebral end-plate.

36. (Withdrawn) A hollow spinal spacer for engagement between vertebrae, comprising:

- an anterior wall having opposite ends and defining an anterior superior surface and an anterior inferior surface;

- a posterior wall having opposite ends and defining a posterior superior surface and a posterior inferior surface;

- two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber, each said lateral wall defining a convex lateral superior surface and a convex lateral inferior surface,

 - each said lateral superior surface defining a superior radius configured to correspond to the inferior shape of a vertebral end-plate;

 - each said lateral inferior surface defining an inferior radius configured to correspond to the superior shape of a vertebral end-plate;

- a superior vertebral engaging face including said anterior superior surface, said posterior superior surface and said lateral superior surfaces, said superior face defining a first opening in communication with said chamber; and

- an inferior vertebral engaging face including said anterior inferior surface, said posterior inferior surface and said lateral inferior surfaces, said inferior face having a second opening in communication with said chamber.

37. (Withdrawn) The spacer of claim 36 wherein said walls and said faces are composed of a biocompatible composite including a rigid foam carbonaceous material and a thin film of metallic material deposited onto said carbonaceous material.

38. (Withdrawn) The spacer of claim 36 wherein said superior radius is between about 0.500" and about 1.250" and said inferior radius is between about 0.500" and about 1.250".

39. (Withdrawn) The spacer of claim 38 wherein both said superior and inferior radii are each about 0.750.

40. (Withdrawn) The spacer of claim 36 wherein said anterior wall has a convexly curved anterior surface and said posterior wall has a flat posterior surface.

41. (Withdrawn) The spacer of claim 36 wherein said anterior wall defines a thru-hole for receiving an implanting tool.

42.-57. (Cancelled)

58. (Currently Amended) A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having a convexly curved anterior surface and opposite ends;

a posterior wall having a flat posterior surface and opposite ends;

two lateral walls, each having a flat lateral surface ~~and integrally connected between said opposite ends of~~ extending continuously from said anterior wall ~~and to said~~ posterior walls to define a chamber; and

said anterior, posterior and lateral walls cooperating to define a D-shaped spacer body sized and configured to substantially fill the space between the vertebrae with said convexly curved anterior surface of said anterior wall sized and shaped to substantially conform to an anterior aspect of the space between the vertebrae and wherein said walls of said spacer body are sized and shaped such that a single spacer body is sufficient to preserve a height of the space between the vertebrae; and

said walls further defining:

a superior vertebral engaging face defined by a thickness of said walls, said superior vertebral engaging face extending about a first opening defined by said chamber; and

an opposite inferior vertebral engaging face defined by said thickness of said walls, said opposite inferior vertebral engaging face extending about a second opening

defined by said chamber; and

wherein said anterior and posterior walls are formed integral with said lateral walls to define a monolithic, single-piece spacer body.

59. (Currently Amended) The spacer of claim 1, wherein said anterior and posterior walls are formed integral with said lateral walls to define a said monolithic, single-piece spacer body.

60. (Previously Presented) The spacer of claim 1 wherein said anterior wall is configured for engagement with an implanting tool to allow for anterior insertion of the spinal spacer into the space between the vertebrae.

61. (Previously Presented) The spacer of claim 60 wherein said anterior wall defines an opening extending through said convexly curved anterior surface and configured to receive an end portion of said implanting tool.

62. (Previously Presented) The spacer of claim 61 wherein said opening is threaded.

63. (Previously Presented) The spacer of claim 1 wherein said superior face and said inferior face each define a roughened surface adapted to provide a friction fit with bone.

64. (Previously Presented) The spacer of claim 1 wherein the spacer defines an overall spacer width between said lateral walls and an overall spacer length between said anterior wall and said posterior wall, said overall spacer width being substantially equal to said overall spacer length.

65. (Previously Presented) The spacer of claim 58 wherein said anterior wall is configured for engagement with an implanting tool to allow for anterior insertion of the spinal spacer into the space between the vertebrae.

66. (Previously Presented) The spacer of claim 65 wherein said anterior wall defines an opening extending through said convexly curved anterior surface and configured to receive an end portion of said implanting tool.

67. (Previously Presented) The spacer of claim 66 wherein said opening is threaded.

68. (Previously Presented) The spacer of claim 58 wherein said superior face and said inferior face each define a roughened surface adapted to provide a friction fit with bone.

69. (Previously Presented) The spacer of claim 58 wherein the spacer defines an overall spacer width between said lateral walls and an overall spacer length between said anterior wall and said posterior wall, said overall spacer width being substantially equal to said overall spacer length.